STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING
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PRELIMINARY HYDROLOGIC STUDY
5-M INC., SILVER REEF MINE
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RECLAMATION HYDROLOGIST

Purpose: The purpose of this study is to determine the volumes of runoff that would be collected and held by the four heap leach ponds proposed for the Silver Reef projects for various storms of increasing return periods. The probability of these storms being exceeded at least once in a 30-year period is also listed.

Scope: The four proposed heap leach ponds are located in a small canyon watershed of approximately 86 acres, located between White Reef and Buckeye Reef, west of Leeds, Utah.

Method: The main watershed and the drainage areas for each heap leach area were determined by a topographic map submitted by 5-M. To date, the work has not been field varified by the author. Storms of various return periods were studied and the amount of direct precipitation and runoff, compiled by the SCS curve number technique, flowing into the ponds from their determined drainage areas was tabulated. Total runoff to be held by each heap leach pond is listed in the worksheet, shaded yellow, by depth over each pond and acre-feet of volume.

Results: The results are listed in the worksheet. For example, the 100-year, 6-hour storm will result in 2.50 inches of rain; it has a probability of being exceeded at least once in a 30-year period of 26%; and, 5.92 inches (1.03 acre-feet) of direct precipitation and runoff will be collected in heap leach pond number one. The probably maximum thunderstorm, of one hour duration, will result in 6-inches of rainfall. Direct precipitation and runoff from the drainage area for pond one will result in 16.84 inches (2.93 acre-feet) of water to be held in pond one.

To design for 90% assurance that the dams holding back runoff and direct precipitation will not be over-topped within a period of 30-years, the design must be based on the storm of a 285 year return period.

Discussion: This preliminary study should be field varified, especially the map depicting surface runoff patterns.
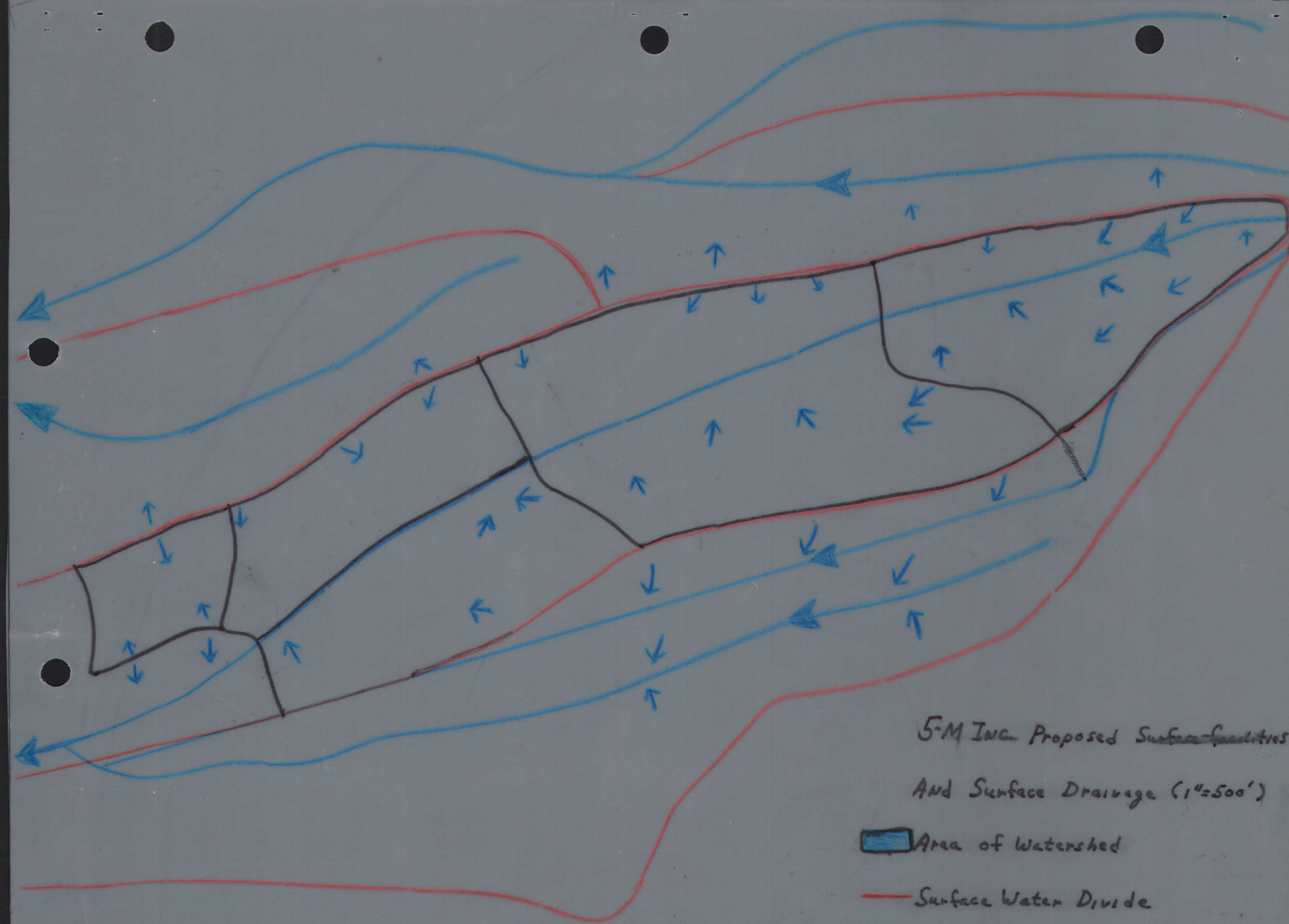
5·M Inc. Proposed Surface facilities
And Surface Drainage (1"=500')

▭ Area of Watershed

—— Surface Water Divide

←—— Direction of Surface Water Flow